

In the Claims

For the convenience of the Examiner, all pending claims are set forth below, whether or not an amendment is made. Please amend the claims as follows:

1. (Currently Amended) ~~A method of optimizing point-to-point sessions, comprising:~~ A computer-readable medium encoded with a data structure operable to perform the following:

communicating, by a packet data serving node, with a current packet controller function through a tunnel, the current packet controller function operating as a packet switch that provides a circuit service between the packet data serving node and a base station controller, the tunnel enabling the current packet controller function and the packet data serving node to communicate over an Internet Protocol-based network, the current packet controller function serviced by the packet data serving node;

receiving, through the tunnel, a registration request from a mobile node, the mobile node communicating with a ~~current~~ the current packet controller function ~~serviced by a packet data serving node~~;

determining, at the packet data serving node, whether the registration request comprises a previous access network identifier identifying a previous packet controller function;

determining, at the packet data serving node, whether the mobile node is serviced by a mobile Internet Protocol;

determining, at the packet data serving node, whether the mobile node communicated with a previous packet controller function serviced by the packet data serving node; and

deciding, at the packet data serving node, whether to negotiate a point-to-point session for the mobile node in response to the determinations.

2. (Original) The method of Claim 1, wherein the registration request comprises a request for service at the packet data serving node.

3. (Original) The method of Claim 1, wherein deciding whether to negotiate the point-to-point session for the mobile node comprises:

negotiating the point-to-point session if the mobile node did not communicate with a previous packet controller function serviced by the packet data serving node; and

updating the point-to-point session if the mobile node communicated with a previous packet controller function serviced by the packet data serving node.

4. (Original) The method of Claim 1, wherein deciding whether to negotiate the point-to-point session for the mobile node comprises:

determining whether there is a session context for the mobile node;

negotiating the point-to-point session if there is no session context; and

updating the point-to-point session if there is session context.

5. (Currently Amended) The method of Claim 1, ~~further comprising:~~ wherein:
determining, at the packet data serving node, whether the registration request comprises the previous access network identifier further comprises:

determining that the registration request comprises the previous access network identifier; and

identifying the previous packet controller function from the previous access network identifier;

determining, at the packet data serving node, whether the mobile node communicated with the previous packet controller function further comprises:

determining whether the previous packet controller function is serviced by the packet data serving node;

negotiating the point-to-point session if the previous packet controller function is not serviced by the packet data serving node; and

updating the point-to-point session if the previous packet controller function is serviced by the packet data serving node.

6. (Original) The method of Claim 1, further comprising generating a table comprising an entry associated with the mobile node, the entry comprising a mobile node identifier, a previous access network identifier, and a current access network identifier.

7. (Original) The method of claim 6, further comprising updating a tunnel connection operable to communicate a plurality of data packets between the current packet controller function and the packet data serving node by updating the entry associated with the mobile node.

8. (Currently Amended) ~~A method of optimizing point-to-point sessions, comprising:~~ A computer-readable medium encoded with a data structure operable to perform the following:

communicating, by a packet data serving node, with a current packet controller function through a tunnel, the current packet controller function operating as a packet switch that provides a circuit service between the packet data serving node and a base station controller, the tunnel enabling the current packet controller function and the packet data serving node to communicate over an Internet Protocol-based network, the current packet controller function serviced by the packet data serving node;

receiving, through the tunnel, a registration request from a mobile node, the mobile node communicating with a current the current ~~packet controller function serviced by a packet data serving node;~~

determining, at the packet data serving node, whether the registration request comprises a previous access network identifier identifying a previous packet controller function;

determining, at the packet data serving node, whether the mobile node is serviced by a mobile Internet Protocol or a simple Internet Protocol;

determining, at the packet data serving node, whether the mobile node communicated with a previous packet controller function serviced by the packet data serving node;

deciding, at the packet data serving node, whether to negotiate a point-to-point session for the mobile node in response to the determinations;

~~determining that the mobile node is serviced by a simple Internet Protocol; if the~~ mobile node is serviced by the simple Internet Protocol;

determining whether a first Internet Protocol address associated with the mobile node is ~~substantially similar to~~ the same as a second Internet Protocol address associated with the mobile node, the first Internet Protocol address associated with a message received from the mobile node, the second Internet Protocol address stored at the packet data serving node;

negotiating the point-to-point session, if the first Internet Protocol address is not ~~substantially similar to~~ the same as the second Internet Protocol address; and

updating the point-to-point session, if the first Internet Protocol address is ~~substantially similar to~~ the same as the second Internet Protocol address.

9. (Currently Amended) ~~A method of optimizing point-to-point sessions comprising:~~ A computer-readable medium encoded with a data structure operable to perform the following:

communicating, by a packet data serving node, with a current packet controller function through a tunnel, the current packet controller function operating as a packet switch that provides a circuit service between the packet data serving node and a base station controller, the tunnel enabling the current packet controller function and the packet data serving node to communicate over an Internet Protocol-based network, the current packet controller function serviced by the packet data serving node;

receiving, through the tunnel, a registration request from a mobile node, the mobile node communicating with a ~~current~~ the current packet controller function ~~serviced by a packet data serving node~~;

determining, at the packet data serving node, whether the mobile node is serviced by a mobile Internet Protocol;

determining, at the packet data serving node, whether the mobile node communicated with a previous packet controller function serviced by the packet data serving node; and

deciding, at the packet data serving node, whether to negotiate a point-to-point session for the mobile node in response to the determinations.

10. (Original) The method of Claim 9, wherein the registration request comprises a request for service at the packet data serving node.

11. (Original) The method of Claim 9, wherein deciding whether to negotiate the point-to-point session for the mobile node comprises:

negotiating the point-to-point session if the mobile node did not communicate with a previous packet controller function serviced by the packet data serving node; and

updating the point-to-point session if the mobile node communicated with a previous packet controller function serviced by the packet data serving node.

12. (Original) The method of Claim 9, wherein deciding whether to negotiate the point-to-point session for the mobile node comprises:

determining whether there is a session context for the mobile node;
negotiating the point-to-point session if there is no session context; and
updating the point-to-point session if there is session context.

13. (Original) The method of Claim 9, further comprising generating a table comprising an entry associated with the mobile node, the entry comprising a mobile node identifier, a previous access network identifier, and a current access network identifier.

14. (Original) The method of claim 13, further comprising updating a tunnel connection operable to communicate a plurality of data packets between the current packet controller function and the packet data serving node by updating the entry associated with the mobile node.

15. (Currently Amended) ~~A method of optimizing point-to-point sessions comprising:~~ A computer-readable medium encoded with a data structure operable to perform the following:

communicating, by a packet data serving node, with a current packet controller function through a tunnel, the current packet controller function operating as a packet switch that provides a circuit service between the packet data serving node and a base station controller, the tunnel enabling the current packet controller function and the packet data serving node to communicate over an Internet Protocol-based network, the current packet controller function serviced by the packet data serving node;

receiving, through the tunnel, a registration request from a mobile node, the mobile node communicating with a ~~current~~ the current packet controller function serviced by a ~~packet data serving node~~;

determining, at the packet data serving node, whether the mobile node is serviced by a mobile Internet Protocol ~~or a simple Internet Protocol~~;

determining, at the packet data serving node, whether the mobile node communicated with a previous packet controller function serviced by the packet data serving node;

deciding, at the packet data serving node, whether to negotiate a point-to-point session for the mobile node in response to the determinations;

~~determining that the mobile node is serviced by a simple Internet Protocol; if the mobile node is serviced by the simple Internet Protocol;~~

determining whether a first Internet Protocol address associated with the mobile node is ~~substantially similar to~~ the same as a second Internet Protocol address, the first Internet Protocol address associated with a message received from the mobile node, the second Internet Protocol address stored at the packet data serving node;

negotiating the point-to-point session, if the first Internet Protocol address is not ~~substantially similar to~~ the same as the second Internet Protocol address; and

updating the point-to-point session, if the first Internet Protocol address is ~~substantially similar to~~ the same as the second Internet Protocol address.

16. (Currently Amended) A system for optimizing point-to-point sessions comprising:

at least one packet data serving node operable to:

communicate with a current packet controller function through a tunnel, the current packet controller function operating as a packet switch that provides a circuit service between the packet data serving node and a base station controller, the tunnel enabling the current packet controller function and the packet data serving node to communicate over an Internet Protocol-based network, the current packet controller function serviced by the packet data serving node;

receive, through the tunnel, a registration request from a mobile node, the mobile node communicating with ~~a current~~ the current packet controller function ~~serviced by a packet data serving node;~~

determine whether the registration request comprises a previous access network identifier identifying a previous packet controller function;

determine whether the mobile node is serviced by a mobile Internet Protocol;

determine whether the mobile node communicated with a previous packet controller function serviced by the packet data serving node; and

decide whether to negotiate a point-to-point session for the mobile node in response to the determinations; and

a plurality of packet controller functions communicating with the at least one packet data serving node.

17. (Original) The system of Claim 16, wherein the registration request comprises a request for service from the at least one packet data serving node.

18. (Original) The system of Claim 16, wherein the at least one packet data serving node is further operable to decide whether to negotiate the point-to-point session for the mobile node by:

negotiating the point-to-point session if the mobile node did not communicate with a previous packet controller function serviced by the packet data serving node; and

updating the point-to-point session if the mobile node communicated with a previous packet controller function serviced by the packet data serving node.

19. (Original) The system of Claim 16, wherein the at least one packet data serving node is further operable to decide whether to negotiate the point-to-point session for the mobile node by:

determining whether there is a session context for the mobile node;

negotiating the point-to-point session if the mobile node did not communicate with a previous packet controller function serviced by the packet data serving node; and

updating the point-to-point session if the mobile node communicated with a previous packet controller function serviced by the packet data serving node.

20. (Currently Amended) The system of Claim 16, wherein the at least one packet data serving node is further operable to:

determine whether the registration request comprises the previous access network identifier by:

~~determine~~ determining that the registration request comprises the previous access network identifier; and

~~identify~~ identifying the previous packet controller function from the previous access network identifier;

determine whether the mobile node communicated with the previous packet controller function by:

~~determine~~ determining whether the previous packet controller function is serviced by the packet data serving node;

negotiating the point-to-point session if the previous packet controller function is not serviced by the packet data serving node; and

updating the point-to-point session if the previous packet controller function is serviced by the packet data serving node.

21. (Original) The system of Claim 16, wherein the at least one packet data serving node is further operable to generate a table comprising an entry associated with the mobile node, the entry comprising a mobile node identifier, a previous access network identifier, and a current access network identifier.

22. (Original) The system of Claim 21, wherein the at least one packet data serving node is further operable to update a tunnel connection operable to communicate a plurality of data packets between the current packet controller function and the packet data serving node by updating the entry associated with the mobile node.

23. (Currently Amended) A system for optimizing point-to-point sessions comprising:

at least one packet data serving node operable to:

communicate with a current packet controller function through a tunnel, the current packet controller function operating as a packet switch that provides a circuit service between the packet data serving node and a base station controller, the tunnel enabling the current packet controller function and the packet data serving node to communicate over an Internet Protocol-based network, the current packet controller function serviced by the packet data serving node;

receive, through the tunnel, a registration request from a mobile node, the mobile node communicating with ~~a current~~ the current packet controller function ~~serviced by a packet data serving node;~~

determine whether the registration request comprises a previous access network identifier identifying a previous packet controller function;

determine whether the mobile node is serviced by a mobile Internet Protocol or a simple Internet Protocol;

determine whether the mobile node communicated with a previous packet controller function serviced by the packet data serving node; and

decide whether to negotiate a point-to-point session for the mobile node in response to the determinations; and

a plurality of packet controller functions communicating with the at least one packet data serving node; and

the at least one packet data serving node further operable to:

~~determine that the mobile node is serviced by a simple Internet Protocol;~~ if the mobile node is serviced by the simple Internet Protocol:

determine whether a first Internet Protocol address associated with the mobile node is ~~substantially similar to~~ the same as a second Internet Protocol address associated with the mobile node, the first Internet Protocol address associated with a message received from the mobile node, the second Internet Protocol address stored at the packet data serving node;

negotiate the point-to-point session, if the first Internet Protocol address is not ~~substantially similar to~~ the same as the second Internet Protocol address; and

update the point-to-point session, if the first Internet Protocol address is ~~substantially similar to~~ the same as the second Internet Protocol address.

24. (Original) The system of Claim 16, wherein at least one of the packet controller functions is operable to:

communicate with the at least one packet data serving node; and
store an access network identifier identifying the at least one packet controller function.

25. (Original) The system of claim 16, wherein the at least one packet data serving node is further operable to establish a tunnel connection to communicate between the at least one packet controller function and the at least one packet data serving node.

26. (Currently Amended) A packet data serving node for optimizing point-to-point sessions comprising:

a memory operable to store a table, the table comprising an entry corresponding to a mobile node, the entry comprising:

a mobile station identifier field operable to store a mobile station identifier;
and

a previous access network identifier field operable to store a previous access network identifier;

a processor coupled to the memory and operable to:

communicate with a current packet controller function through a tunnel, the current packet controller function operating as a packet switch that provides a circuit service between the packet data serving node and a base station controller, the tunnel enabling the current packet controller function and the packet data serving node to communicate over an Internet Protocol-based network, the current packet controller function serviced by the packet data serving node;

receive a registration request from the mobile node;

determine whether the registration request comprises a previous access network identifier identifying a previous packet controller function;

determine whether the mobile node is serviced by a mobile Internet Protocol;

determine whether the mobile node communicated with a previous packet controller function serviced by the packet data serving node; and

decide whether to negotiate a point-to-point session for the mobile node in response to the determinations.

27. (Original) The packet data serving node of Claim 26, wherein the registration request comprises a request for service from the packet data serving node.

28. (Original) The packet data serving node of Claim 26, wherein the processor is further operable to:

negotiate the point-to-point session if the mobile node did not communicate with a previous packet controller function serviced by the packet data serving node; and

updating the point-to-point session if the mobile node communicated with a previous packet controller function serviced by the packet data serving node.

29. (Original) The packet data serving node of Claim 26, wherein the processor is further operable to:

determine whether there is a session context for the mobile node;

negotiate the point-to-point session if there is no session context; and

updating the point-to-point session if there is session context.

30. (Currently Amended) The packet data serving node of Claim 26, wherein the processor is further operable to:

determine whether the registration request comprises the previous access network identifier by:

~~determine~~ determining that the registration request comprises the previous access network identifier; and

~~identify~~ identifying the previous packet controller function;

determine whether the mobile node communicated with the previous packet controller function by:

~~determine~~ determining whether the previous packet controller function is serviced by the packet data serving node;

negotiate the point-to-point session if the previous packet controller function is not serviced by the packet data serving node; and

update the point-to-point session if the previous packet controller function is serviced by the packet data serving node.

31. (Original) The packet data serving node of Claim 26, wherein the processor is further operable to:

identify the mobile station identifier in the registration request; and
retrieve the entry corresponding to the mobile station identifier from the table.

32. (Currently Amended) A packet data serving node for optimizing point-to-point sessions comprising:

a memory operable to store a table, the table comprising an entry corresponding to a mobile node, the entry comprising:

a mobile station identifier field operable to store a mobile station identifier;

and

a previous access network identifier field operable to store a previous access network identifier;

a processor coupled to the memory and operable to:

communicate with a current packet controller function through a tunnel, the current packet controller function operating as a packet switch that provides a circuit service between the packet data serving node and a base station controller, the tunnel enabling the current packet controller function and the packet data serving node to communicate over an Internet Protocol-based network, the current packet controller function serviced by the packet data serving node;

receive a registration request from the mobile node;

determine whether the registration request comprises a previous access network identifier identifying a previous packet controller function;

determine whether the mobile node is serviced by a mobile Internet Protocol or a simple Internet Protocol;

determine whether the mobile node communicated with a previous packet controller function serviced by the packet data serving node;

decide whether to negotiate a point-to-point session for the mobile node in response to the determinations;

~~determine that the mobile node is serviced by a simple Internet Protocol;~~ if the mobile node is serviced by the simple Internet Protocol:

determine whether a first Internet Protocol address associated with the mobile node is ~~substantially similar to~~ the same as a second Internet Protocol address associated with the mobile node, the first Internet Protocol address associated with a message received from the mobile node, the second Internet Protocol address stored in the table;

negotiate the point-to-point session, if the first Internet Protocol address is not ~~substantially similar to~~ the same as the second Internet Protocol address; and

update the point-to-point session, if the first Internet Protocol address is ~~substantially similar to~~ the same as the second Internet Protocol address.

33. (Currently Amended) ~~Logic for optimization of point-to-point sessions, the logic embodied in a computer-readable medium and operable to:~~ A computer-readable medium encoded with a data structure operable to:

communicate, by a packet data serving node, with a current packet controller function through a tunnel, the current packet controller function operating as a packet switch that provides a circuit service between the packet data serving node and a base station controller, the tunnel enabling the current packet controller function and the packet data serving node to communicate over an Internet Protocol-based network, the current packet controller function serviced by the packet data serving node;

receive a registration request from a mobile node;

determine, at ~~a packet~~ the packet data serving node, whether the registration request comprises a previous access network identifier identifying a previous packet controller function;

determine, at the packet data serving node, whether the mobile node is serviced by a mobile Internet Protocol;

determine, at the packet data serving node, whether the mobile node communicated with a previous packet controller function serviced by the packet data serving node; and

decide, at the packet data serving node, whether to negotiate a point-to-point session for the mobile node in response to the determinations.

34. (Original) The logic of Claim 33, wherein the logic is operable to decide whether to negotiate a point-to-point session for the mobile node by:

negotiating the point-to-point session if the mobile node did not communicate with a previous packet controller function serviced by the packet data serving node; and

updating the point-to-point session if the mobile node communicated with a previous packet controller function serviced by the packet data serving node.

35. (Original) The logic of Claim 33, wherein the logic is operable to decide whether to negotiate a point-to-point session for the mobile node by:

determining whether there is a session context for the mobile node;
negotiating the point-to-point session if there is no session context; and
updating the point-to-point session if there is session context.

36. (Currently Amended) The logic of Claim 33, further operable to:
determine whether the registration request comprises the previous access network identifier by:

~~determine~~ determining that the registration request comprises the previous access network identifier; and

~~identify~~ identifying the previous packet controller function from the previous access network identifier;

determine whether the mobile node communicated with the previous packet controller function by:

~~determine~~ determining whether the previous packet controller function is serviced by the packet data serving node;

negotiate the point-to-point session if the previous packet controller function is not serviced by the packet data serving node; and

update the point-to-point session if the previous packet controller function is serviced by the packet data serving node.

37. (Original) The logic of Claim 33, further operable to generate a table comprising an entry associated with the mobile node, the entry comprising a mobile node identifier, a previous access network identifier, and a current access network identifier.

38. (Original) The logic of claim 37, further operable to update a tunnel connection operable to communicate a plurality of data packets between the current packet controller function and the packet data serving node by updating the entry associated with the mobile node.

39. (Currently Amended) ~~Logic for optimization of point-to-point sessions, the logic embodied in a computer-readable medium and operable to:~~ A computer-readable medium encoded with a data structure operable to:

communicate, by a packet data serving node, with a current packet controller function through a tunnel, the current packet controller function operating as a packet switch that provides a circuit service between the packet data serving node and a base station controller, the tunnel enabling the current packet controller function and the packet data serving node to communicate over an Internet Protocol-based network, the current packet controller function serviced by the packet data serving node;

receive a registration request from a mobile node;

determine, at ~~a packet~~ the packet data serving node, whether the registration request comprises a previous access network identifier identifying a previous packet controller function;

determine, at the packet data serving node, whether the mobile node is serviced by a mobile Internet Protocol or a simple Internet Protocol;

determine, at the packet data serving node, whether the mobile node communicated with a previous packet controller function serviced by the packet data serving node;

decide, at the packet data serving node, whether to negotiate a point-to-point session for the mobile node in response to the determinations;

~~determine that the mobile node is serviced by a simple Internet Protocol;~~ if the mobile node is serviced by the simple Internet Protocol:

determine whether a first Internet Protocol address associated with the mobile node is ~~substantially similar to~~ the same as a second Internet Protocol address associated with the mobile node, the first Internet Protocol address associated with a message received from the mobile node, the second Internet Protocol address stored at a packet data serving node;

negotiate the point-to-point session, if the first Internet Protocol address is not ~~substantially similar to~~ the same as the second Internet Protocol address; and

update the point-to-point session, if the first Internet Protocol address is ~~substantially similar to~~ the same as the second Internet Protocol address.

40. (Currently Amended) A system for optimizing point-to-point sessions comprising:

means for communicating, by a packet data serving node, with a current packet controller function through a tunnel, the current packet controller function operating as a packet switch that provides a circuit service between the packet data serving node and a base station controller, the tunnel enabling the current packet controller function and the packet data serving node to communicate over an Internet Protocol-based network, the current packet controller function serviced by the packet data serving node;

means for receiving, through the tunnel, a registration request from a mobile node, the mobile node communicating with ~~a current~~ the current packet controller function ~~serviced by a packet data serving node;~~

a means for determining, at the packet data serving node, whether the registration request comprises a previous access network identifier identifying a previous packet controller function;

a means for determining, at the packet data serving node, whether the mobile node is serviced by a mobile Internet Protocol;

a means for determining, at the packet data serving node, whether the mobile node communicated with a previous packet controller function serviced by the packet data serving node; and

a means for deciding, at the packet data serving node, whether to negotiate a point-to-point session for the mobile node in response to the determinations.

41. (Currently Amended) ~~A method of optimizing point-to-point sessions comprising:~~ A computer-readable medium encoded with a data structure operable to perform the following:

communicating, by a packet data serving node, with a current packet controller function through a tunnel, the current packet controller function operating as a packet switch that provides a circuit service between the packet data serving node and a base station controller, the tunnel enabling the current packet controller function and the packet data serving node to communicate over an Internet Protocol-based network, the current packet controller function serviced by the packet data serving node;

receiving, through the tunnel, a registration request from a mobile node, the mobile node communicating with a current the current packet controller function serviced by a packet data serving node;

determining, at a packet data serving node, whether the registration request comprises a previous access network identifier identifying a previous packet controller function;

determining, at the packet data serving node, whether the mobile node is serviced by a mobile Internet Protocol;

determining, at the packet data serving node, whether the mobile node communicated with a previous packet controller function serviced by the packet data serving node; and

deciding, at the packet data serving node, whether to negotiate a point-to-point session for the mobile node in response to the determinations by:

negotiating the point-to-point session if the mobile node did not communicate through the previous packet controller function serviced by the packet data serving node; and

updating the point-to-point session if the mobile node did communicate through the previous packet controller function serviced by the packet data serving node.